

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM



Course Information
January 17 - 27, 2006
Tucson, Arizona

National Advanced Fire & Resource Institute



United States
Department of
Agriculture

Forest
Service

National Advanced Fire
and Resource Institute
3265 E. Universal Way
Tucson, Arizona 85706

File Code: 5100

Date: December 20, 2005

Subject: National Fire Danger Rating System (NFDRS)
January 17 - 27, 2006

To: NFDRS Nominees

Welcome NFDRS nominees. The National Advanced Fire and Resource Institute (NAFRI) has reached our 1 year anniversary in our new facility, which is closely situated to the Tucson International Airport. Our address and phone numbers are:

Place: NAFRI (*National Fire Institute*)
Address: 3265 E. Universal Way, Tucson, AZ 85706

Main Phone: (520) 799-8787
Fax: (520) 799-8785

NAFRI has not blocked any hotel rooms for this meeting. Members will need to make their own Hotel room reservations. NAFRI does not provide transportation, these hotels will provide shuttle service to and from the airport, as well as, daily shuttle to and from the *National Fire Institute*, so rental cars may not be necessary. The hotels also provide free continental breakfast. Other amenities may be provided based on the individual hotel properties.

Amerisuites 6885 S. Tucson Blvd 520-295-0405/**800-833-1516** - Fax 520-295-9140 www.amerisuites.com
Best Western 7060 S Tucson Blvd 520-746-0271/**800-772-3847** - Fax 520-889-7391 www.bestwestern.com
Clarion Hotel 6801 S Tucson Blvd 520-746-3932/**800-526-0550** - Fax 520-889-9934 www.choicehotels.com
Comfort Suites 6935 S Tucson Blvd 520-295-4400/**800-424-6423** - Fax 520-295-4497 www.choicehotels.com
Country Inn & Suites ... 6681 S Tucson Blvd 520-741-9000/**800-456-4000** - Fax 520-741-9100 www.countryinns.com
Courtyard by Marriott .. 2505 E Executive Drive . 520-573-0000/**800-321-2211** - Fax 520-573-0470 www.courtyard.com
Embassy Suites 7051 S Tucson Blvd 520-573-0700/**800-262-8866** - Fax 520-741-9645 www.embassysuites.com
Fairfield Inn by Marriott .. 6955 S Tucson Blvd .. 520-295-8800/**800-224-0023** - Fax 520-295-8898 www.fairfieldinn.com
Hampton Inn 6971 S Tucson Blvd 520-918-9000/**800-426-7866** - Fax 520-889-4002 www.hamptoninn.com
Holiday Inn Express 2548 E Medina Road 520-899-6600/**800-864-2145** - Fax 520-899-6168 www.hiexpress.com
La Quinta Inn 7001 S Tucson Blvd 520-573-3333/**800-531-5900** - Fax 520-573-7710 www.laquinta.com

It is very important that you make your room reservations as soon as possible. There are several events taking place in Tucson during our course period, the International Gem show is one, and obtaining reservations at government rates will be limited. Please advise the hotel that you are involved with a NAFRI course session, most establishments have honored our rates.

The enclosed packet of information also include course objectives, 2006 Faculty roster, 2006 course schedule, and our location area map and facility layout.

If you have any questions concerning this meeting, please directly contact Tim Peterson/Course Coordinator at (520) 799-8751, or email; tjpeterson@fs.fed.us. Should Tim not be available contact Elaine Bledsoe (520) 799-8744, ebledsoe@fs.fed.us. FAX: (520) 799-8785. The NAFRI website, www.nafri.gov , may also be able to answer your questions. We look forward to having you at NAFRI.

Merrie M. Johnson
Director
National Advanced Fire and Resource Institute

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

**Faculty Meeting
October 17-21, 2005
Tucson, Arizona**

VISION STATEMENT

The National Fire Danger Rating System (NFDRS) is a trusted decision tool for fire and resource managers. The NFDRS is based upon the integration of the latest fire and atmospheric sciences, climatology, remote sensing, and GIS technology. It is supported by processors and data management systems which are robust and flexible enough to remain state of the art. The NFDRS is easy to use - requiring limited human intervention, minimal in cost, and can be applied through space (locally, regionally, nationally) and time (today, tomorrow, seasonally) across the United States. System access is web-based and outputs are displayed with tabular, graphical, and GIS formats. Fire danger is a description of factors - fuels, weather, topography - which affect the initiation, spread, and difficulty of control of wildfires on an area.

COURSE GOAL

The goal of this training course is to promote better decision-making and planning using the National Fire Danger Rating System (NFDRS). Promote the development and implementation of fire danger rating operating plans at the local level to be integrated into Geographic Area and National level decision processes. Develop a pool of technical experts and cadre for Fire Danger Rating (FDR) guidance and instruction.

COURSE OBJECTIVES

1. Review NFDRS design and its relationship to other fire management systems and processes.
2. Through the development of an operating plan, demonstrate a working knowledge of the process required to design, setup, and manage the fire danger rating system.
3. Relate NFDRS outputs to some measure of fire business and develop skills to adapt NFDRS analysis to the local unit.
4. Demonstrate how fire danger rating supports Geographic Area and National decision-making.
5. Design and validate a decision model for short and long-term operations involving NFDRS, fire danger climatology, and fire management planning systems.
6. Introduce new NFDRS related technology as it becomes available.
7. Demonstrate techniques to analyze outputs of NFDRS programs to identify errors and troubleshoot system problems.
8. Provide background information from which participants can support Geographic Area NFDRS training.

UNIT OBJECTIVES

Unit 0 – Pre-Course Test and Student Profile

Upon successful completion of this unit, students will be able to:

1. Demonstrate a basic working knowledge in FireFamily Plus and NDVI.

Unit I – Background and Principles of NFDRS (LP 3, 4, 18, 25)

Upon successful completion of this unit, students will be able to:

1. Understand the developmental perspective of Fire Danger Rating and NFDRS. (LP 3)
2. Review the philosophy behind the four principles of Fire Danger Rating incorporated in NFDRS. (LP 3)
3. Review the differences of applications among Fire Danger Rating, fire behavior prediction, and fire planning. (LP 3)
4. Describe a Fire Danger Rating planning process. (LP 4)
5. Understand the national view of the use and application of Fire Danger Rating. (LP 18, 25)

Unit II – Characterization of Fire Danger Rating Areas (LP 5, 6, 7, 8, 9, 10, 19 EX 1, 2, 3)

Upon successful completion of this unit, students will be able to:

1. Describe methods integrating historic fire occurrence, fire environment, and human factors into the development of Fire Danger Rating Areas and the decision making process. (LP 5)
2. Describe the origin of climate classes, and the role of climate and topography in the development of Fire Danger Rating Areas. (LP 19)
3. Discuss the interaction of fuel model components and selections based upon their response to changing environmental conditions and seasonal transition. (LP 6)
4. Understand fuel characteristics and their role in the development of a Fire Danger Rating Area and other decision processes. (LP 7)
5. Describe an analysis process to aid in defining fire management problems that utilize NFDRS outputs as part of the solution. (LP 9)
6. Understand the sensitivity of NFDRS components and indices to the fire environment, and given specific fire problems, evaluate their effectiveness in rating fire danger. (LP 8)

7. Understand the relationship of climatology to fire danger, and describe the role of climatology in short and long-term assessment. (LP 10)

UNIT III – Operations and Applications

Upon successful completion of this unit, students will be able to:

1. List and describe methods for analyzing fire danger climatology and defining Fire Danger Rating Areas.
2. Identify the importance and methods of weather data quality control with consideration to weather station equipment.
3. Understand the statistical methods used in FireFamily Plus and their significance.
4. Describe the appropriate use of remote sensing applications for estimating live fuel moistures based upon vegetative greenness.
5. Identify the importance and methods of historic data quality control and demonstrate the ability to recognize and correct data errors.
6. Demonstrate the ability to identify and resolve anomalies in NFDRS intermediate values and outputs created by data problems and operator error.
7. Describe the role of the fire manager in the implementation and evaluation of the Fire Danger Rating network.

Unit IV – Applications and Decision Models

Upon successful completion of this unit, students will be able to:

1. Understand risk and decision-making.
2. Analyze fire occurrence and identify decision thresholds utilizing FireFamily Plus.
3. Understand how GACC's use NFDRS and climatological information in setting preparedness levels, prepositioning of fire resources, and prioritizing areas for fire protection resource allocation.
4. Understand how Fire Danger Rating pocketcards can be used to communicate relative fire danger, influence initial attack tactics and strategy, and improve fire fighter safety.
5. Understand how NFDRS and climatological information can be used to provide short and long-term assessments of fire danger potential for large geographic areas.
6. Describe agency requirements for determining severity funding needs and understand how NFDRS and climatological information is used to justify requests.

7. Understand how NFDRS and climatological information is used in integrated risk assessments for wildland fire use and wildland fire use projects.
8. Understand a local view of the use and application of Fire Danger Rating.

Unit V – Operating Plan Exercise

Upon successful completion of this exercise, students will be able to:

1. Develop a NFDRS Operating Plan using the available technology, for a broad landscape, through a series of classroom exercises based on the lectures and laboratory activities. (EX 1-7)
2. Demonstrate knowledge of the processes required to set up and manage the NFDRS to support the fire management decision-making process across a broad landscape. (EX 8)

Advanced National Fire Danger Rating System
January 16, 2006
Tucson, Arizona

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ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Tuesday January 17, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
	<i>TRAVEL DAY TO NAFRI</i>	
1000	Steering Committee Meeting	Steering Committee
1100	Faculty Meeting	Faculty
1300	NAFRI Details	Tim Peterson
	Welcome and Introduction	Paul Schlobohm
	Connectivity and Computer Setup	Doug Forrest Sue Petersen
	Review of Pre-Course Work	Sue Petersen
1400	Lesson 1— Introduction of NFDRS Operating Plan Exercise	Russ Gripp Joe Kennedy
1500	Lesson 2 – Lab 1 Introduction to ArcGIS	Joe Frost Katie Madrid-Hipke
1700	Daily Wrap-Up	

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Wednesday January 18, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Paul Schlobohm
0800-0900	Lesson 3 - History, Perspective, and Principles of National Fire Danger Rating System	John Deeming
0900-1000	Lesson 4 - Fire Danger Rating, Planning and Operations	Russ Gripp Joe Kennedy
1000-1030	Lesson 5 - Framing the Problem	Jason Steinmetz
1030-1200	Lesson 6 - Fuel Moisture, Fuel Transfer Concepts and KBDI	Bobbie Bartlette Dave Christenson
1200-1300	LUNCH	
1300-1400	Lesson 7 - Advanced Concepts of Fuel Modeling	Brian Goff
1400-1600	Lesson 8 - Component Indices (Matching Tasks and Sensitivity)	Jeff Kline
1600-1730	Lesson 9 - Interactive Problem Fire Identification	Joe Kennedy Jeff Kline
1730	Daily Wrap-Up	Paul Schlobohm

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Thursday January 19, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Beth Little
0800-0830	Lesson 10 – Fire Problem Identification	Linnea Keating
0830-0930	Exercise 1 – Identification of Fire Problem Exercise 2 – Matching of NFDRS Indices and Components	Russ Gripp Joe Kennedy
0930-1100	Lesson 11 – Climatology and Fire Danger Rating	Tim Brown
1100-1130	Lesson 12 – Building Fire-Danger Rating Areas	Marty Whitmore
1130-1230	LUNCH	
1230-1330	Exercise 3 – Characterization of Vegetation, Topography and Climate	Russ Gripp Joe Kennedy
1330-1430	Lesson 13 – Evaluating Fire Danger Rating Areas	Tim Brown
1430-1530	Lesson 14 - Lab 2 – Evaluating Fire Weather Station Networks	Tim Brown
1530-1630	Lesson 15- Developing and Managing Your Fire Danger Network - A Review of the North Carolina Division of Forest Resource's Fire Danger Network	Gary Curcio
1630	Daily Wrap -Up	Beth Little
1645	Fact and Folklore of NFDRS	John Deeming

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Friday January 20, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Tess Greaves
0800-1000	Lesson 16- Statistics Used in FireFamily Plus	Larry Bradshaw
1000-1100	Lesson 17– Monitoring Live Fuels by Remote Sensing	Bobbie Bartlette
1100-1200	Lesson 18- Lab 3 Monitoring Live Fuels by Remote Sensing	Bobbie Bartlette
1200-1300	LUNCH	
1300-1400	Lesson 18- Lab 3 Monitoring Live Fuels by Remote Sensing (Cont'd)	Bobbie Bartlette
1400-1430	Review of Exercises 1, 2, & 3	
1430-1500	Lesson 19 – Designating Fire Danger Rating Areas	Marty Whitmore
1500	Exercise 4 - Developing Fire Danger Rating Areas Exercise 5 - Designing a Fire Weather Station Network	Russ Gripp Joe Kennedy
1700	Daily Wrap-Up	Tess Greaves

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Monday January 23, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Linnea Keating
0800-0830	Review of Exercises 4 & 5	Russ Gripp Joe Kennedy
0830-0900	Lesson 20 – National Level Perspective of Current Issues and Future Direction of NFDRS	Paul Schlobohm
0900-0930	Lesson 21 – Climate Class and Slope Class for the NFDRS Model	Linnea Keating
0930-1100	Lesson 22 – Advanced Features of FireFamily Plus	Larry Bradshaw
1100-1200	Lesson 23 - Lab 4 Advanced Features of FireFamily Plus	Sue Petersen
1200-1300	LUNCH	
1300-1430	Lesson 24 - Managing the Model	Clint Cross Russ Gripp
1430-1600	Lesson 25 - Historical Data from DRI – Data Sets & Quality Assurance	Dave Christensen
1600-1700	Exercise 6 - Assigning Fuel Model, Slope Class and Climate Class	Russ Gripp Joe Kennedy
1730	Daily Wrap-Up	Linnea Keating

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Tuesday January 24, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Brian Goff
0800-0900	Lesson 26 – Risk and Decision Making in Fire Management	John Swanson
0900-1000	Lesson 27 – Fire Weather Innovations	Kolleen Shelley
1000-1100	Lesson 28 – Defining Decision Thresholds	Larry Bradshaw
1100-1200	Lesson 29 – Lab 5 Fire Business Thresholds	Larry Bradshaw
1200-1300	LUNCH	
1300-1600	Lesson 29 – Lab 5 Fire Business Thresholds (Cont'd)	Larry Bradshaw
1600-1700	Lesson 30 – Lab 6 Creating a Unique Fire Data Set	Flint Cheney Sue Petersen
1730	Daily Wrap-Up	Brian Goff
1830	Bratwurst Feed	

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Wednesday January 25, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Jason Steinmetz
0800-0900	Lesson 31 – Applications of Breakpoints and Thresholds	Paul Schlobohm
0900-1100	Lesson 32 – Fire Management Officer Perspective and Local Application	Brian Goff
1100-1200	LUNCH	
1200-1730	Exercise 7 – Matching NFDRS Outputs to Fire Business	Russ Gripp Joe Kennedy
1730	Daily Wrap-Up	Jason Steinmetz

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Thursday January 26, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE	
0745-0800	Daily Review	Sue Petersen
0800-0900	Lesson 33 - Strategic Applications	Dan Olsen
0900-1030	Lesson 34 – National and Geographic Area Coordination Center Applications	Tom Wordell
1030-1100	Lesson 35 - Lessons Learned	Paula Nasiatka
1100-1200	LUNCH	
1200-1730	Exercise 8 - Preparation of NFDRS Operating Plan	Russ Gripp Joe Kennedy
1730	Daily Wrap-Up	Sue Petersen
2000	Plans Due	Russ Gripp Joe Kennedy

ADVANCED NATIONAL FIRE DANGER RATING SYSTEM

Friday January 27, 2006	NATIONAL ADVANCED FIRE AND RESOURCE INSTITUTE
0730-1030	<p>Presentation – 15 minutes per group</p> <p style="text-align: right;">Russ Gripp Joe Kennedy</p>
1030-1130	<p>Faculty Feedback on Operating Plan</p> <p style="text-align: right;">Coaches</p>
1130-1200	<p>Close out and evaluations</p> <p style="text-align: right;">Paul Schlobohm</p>
	<p style="text-align: center;"><i>TRAVEL DAY</i> FROM NAFRI</p>

AREA MAP

NATIONAL ADVANCED FIRE & RESOURCE INSTITUTE



HOTELS
 RESTAURANTS
 CONVENIENCE & GAS
 TRAFFIC LIGHTS

- | | | | |
|---|--|---|--|
| 1 Embassy Suites | 4 Hampton Inn | 7 Amerisuites | 10 Country Inn |
| 2 Best Western | 5 Fairfield Inn | 8 Clarion Hotel | 11 Courtyard Marriott |
| 3 La Quinta Inn | 6 Comfort Ste. | 9 Holiday Inn Exp. | 12 Park Inn |
| 13 Finnegan's | 18 Kyoto Bowl | 23 McDonald's | 28 Sachiko Sushi |
| 14 The Inn Place | 19 Denny's | 24 Wendy's | 29 Los Betos |
| 15 Morgan's | 20 Jerry Bob's | 25 Baggins | 30 Eegee's |
| 16 Subway | 21 Quiznos | 26 Caffè Nation | 31 Schlotsky's |
| 17 Burger King | 22 Waffle House | 27 Carl's Jr. | |

← To Airport / I-10, I-19

← Valencia Road → To I-10

Airport
Commerce
Center
Entrance

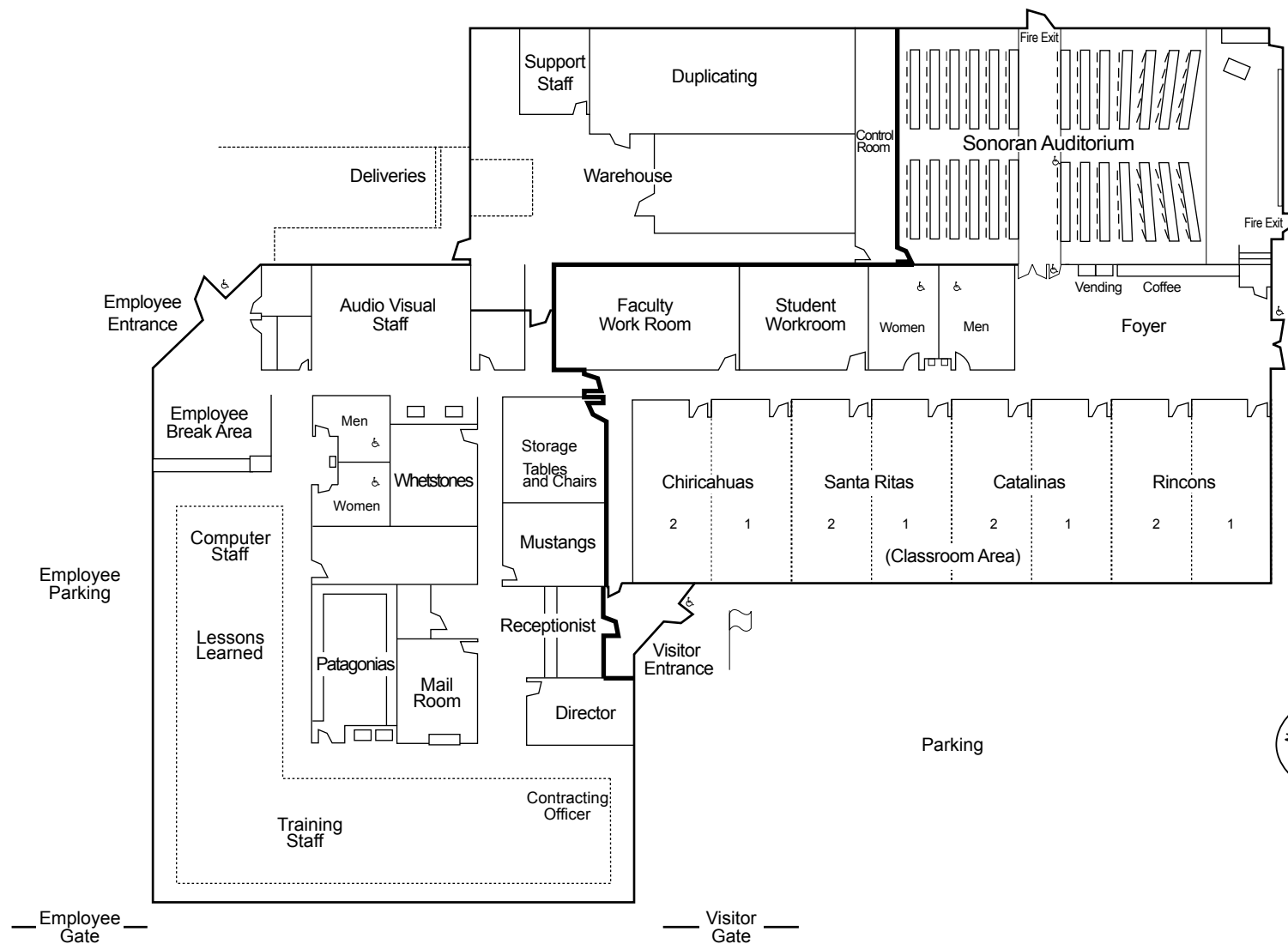
Lisa Frank Ave.

Conference & Training
Entrance

Parking



← Universal Way →



Tucson Facts and Recreation

Tucson is located in the Sonoran Desert approximately 100 miles south of Phoenix and 60 miles north of the Mexico border. It is 2,389 feet above sea level. You can expect typical Sonoran Desert climate during your stay. Temperature highs and lows from November to March are usually in the seventies during the day and forties at night. Late spring and summer daytime temperatures can run into the one-hundreds, with fifty to seventy degrees at night. Tucson receives an average of 350 days of sunshine annually.

Arizona is located in the Mountain Standard Time Zone (MST), however, AZ does not adjust to Daylight Savings Time, and therefore, during the months of April through October, AZ time mirrors Pacific Daylight Time.

Tucson is an ideal area for recreational and cultural activities, if the length of your stay allows time for exploration. Tucson has the flavor of a metropolitan area without forgetting the cultural amenities of its pioneer past. The area abounds with art museums, theaters, restaurants, resorts, and shopping areas.

Tucson metropolitan area covers 500 square miles and the valley is surrounded by five mountain ranges:

- Santa Catalinas – rugged range north and northeast
- Rincon – rolling mountains to the east
- Santa Rita – flanking the distant south & southeast
- Tucson Mountains – shorter, jagged mountains to the west
- Tortolita – closing the ring on the northwest side.

Tucson is the home of the Saguaro National Park, Arizona-Sonora Desert Museum and Coronado National Forest. All these areas provide an excellent interpretation of desert life. The Desert Museum features living examples of typical plants and animals.

Did you know that a Saguaro cactus doesn't start to grow its traditional arms until it is seventy-plus years old? You can learn this and more at the Saguaro National Park operated by the National Park Service. The Coronado National Forest is a study in contrasts. A two-hour drive can take you from desert to alpine lands where Mt. Lemmon features skiing in winter (weather permitting). More than thirty campgrounds are located throughout the Forest. Sabino Canyon east of Tucson is a popular spot known for its cool waters.

Other points of interest include Mission San Xavier del Bac south of Tucson; the frontier town of Tombstone where the famous OK Corral gun battle took place; Nogales, Sonora, Mexico for south-of-the-border shopping and sightseeing; and Tucson's many fine shopping areas including the Foothills, Tucson, Park Place, and El Con Malls.

Make sure you bring clothing suited to the time of your visit. You may want to pack athletic clothes, as the wide-open space provides many jogging and hiking areas.

For free visitor information, call or write:
Tucson Convention and Visitors Bureau
130 S. Scott Avenue
Tucson, Arizona 85701
(520) 624-1817
www.visittucson.org

DINING

Finnegan's

Located in Embassy Suites Hotel
Food & Beverages served until 11:00 pm

Morgan's

Located in the Clarion Hotel
Food & Beverages served until 11:00 pm

The Inn Place

Located in the Best Western Airport
Food & Beverages served in the evening from 5:00 pm to 9:00 pm

Sachiko Sushi

Japanese cuisine, sushi bar and evening karaoke
Food & Beverages served 10:30 am to 11:00 pm

Denny's

24-hour restaurant

Jerry Bob's Family Restaurant

Home-cooked food, Breakfast and lunch menu
Food & Beverages served 5:00 am to 2:00 pm

Waffle House

Breakfast anytime
24 hour restaurant

Kyoto Bowl

Japanese Cuisine
Open 10:30 am to 9:00 pm

Los Betos Mexican Restaurant

Drive-thru
Open 4:30 am to 12 Midnight

Caffe Nation

Coffee, espresso, bagels, baked goods and specialty lunch menu
Free wireless internet available. Food & Beverages served 6:00 am to 6:00 pm

Fast Food in Area

Burger King
Baggins Gourmet Sandwiches
Carl's Jr.
Eegee's
McDonald's
Quiznos
Schlotzsky's Deli
Subway
Wendy's